

In the Claims:

Claims 1. - 30. (Canceled).

31. (Currently Amended) A modeling and control system for representing a manufacturing process as a quantified prediction model, said model comprising nodes, and having definable relationships between said nodes, wherein said nodes include inputs and outputs of said process, and using said representation to control said manufacturing process, said system comprising:

a validator, for validating relationships by analyzing data; and

a simulator, for simulating process performance of said manufacturing process using said validated relationships;

thereby to provide said quantified prediction model for at least feed forward control of operation of said manufacturing process.

32. (Currently Amended) A modeling system according to claim 31, said nodes being inputs and outputs of said manufacturing process, and wherein said validator comprises:

an input discretizer, for converting data having continuous values for said inputs into discretized data having discrete input values; and

an output analyzer, for validating relationships between said inputs and said outputs by analyzing said discretized data.

33. (Previously Presented) A modeling system according to claim 32, wherein said relationships are statistical relationships.

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34. (Previously Presented) A modeling system according to claim 31, further comprising:

a data generator, for generating sample process data by interpolating between data sets giving process input and output values.

35. (Previously Presented) A modeling system according to claim 34, wherein said interpolation comprises linear interpolation.

36. (Currently Amended) A manufacturing process modeler for modeling a manufacturing process as a directed network of nodes for control of said process, wherein each node represents a relationship between inputs and outputs of a component of said manufacturing process, each node having at least one input and at least one output, and wherein said manufacturing process modeler comprises an input for qualitative definitions of inputs and interconnections for entry into said model and an output for outputting control instructions for controlled operation of said manufacturing process.

37. (Currently Amended) A process modeler according to claim 36, wherein at least one of said nodes corresponds to a physical component of said manufacturing process.

38. (Currently Amended) A process modeler according to claim 36, wherein at least one of said nodes corresponds to a logical component of said manufacturing process.

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39. (Previously Presented) A process modeler according to claim 36, wherein an output of at least one of said nodes comprises an input to a separate node.

40. (Currently Amended) A process modeler according to claim 36, further comprising a network validator for applying empirical data to said network, thereby to validate the applicability of said network model to said manufacturing process.

41. (Previously Presented) A process modeler according to claim 40, wherein said network validator is further operable to identify non-influential elements of said network.

42. (Previously Presented) A process modeler according to claim 41, wherein at least one of said non-influential elements comprises one of a group of process elements comprising: an input, an output, and a node interconnection.

43. (Previously Presented) A process modeler according to claim 36, further comprising a network quantifier for applying empirical data to said network, thereby to quantify relationships between said inputs and said outputs.

44. (Previously Presented) A process modeler according to claim 36, wherein said interconnections comprise known connections between nodes.

45. (Previously Presented) A process modeler according to claim 36, wherein said interconnections comprise postulated connections between nodes.

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46. (Currently Amended) A process modeler according to claim 36, wherein said modeler is further operable to remodel said network to reflect changes to said manufacturing process.

47. (Currently Amended) A process modeler according to claim 40, wherein said modeler is further operable to remodel said network if said validation shows that said network does not accurately model said manufacturing process.

48. (Currently Amended) A computerized modeling system for representing a manufacturing process as a quantified prediction model on a computer, said model comprising nodes, and having definable relationships between said nodes, wherein said nodes include inputs and outputs of said manufacturing process, said computerized system comprising:

a validator, for validating relationships by analyzing data; and

a simulator, for simulating process performance using said validated relationships;

thereby to provide said quantified prediction model, said model being usable to provide at least feed forward control of said manufacturing process.

49. (Currently Amended) A computerized process modeler for modeling a manufacturing process as a directed network of nodes, wherein each node provides a virtual relationship between inputs and outputs of a component of said manufacturing process, each node having at least one input and at least one output, and wherein said process modeler comprises an input for qualitative definitions of inputs and

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interconnections for entry into said model, said model being usable to provide at least feed forward control of said manufacturing process.

50. (New) A modeling and control system according to claim 31, wherein said manufacturing process is a semiconductor wafer manufacturing process.

51. (New). A modeling and control system for representing a semiconductor manufacturing process as a quantified prediction model, said model comprising nodes, and having definable relationships between said nodes, wherein said nodes include inputs and outputs of said process, and using said representation to control actual outputs of said semiconductor manufacturing process, said system comprising:

- a validator, for validating relationships by analyzing data; and
- a simulator, for simulating process performance of said semiconductor manufacturing process using said validated relationships;

thereby to provide said quantified prediction model for at least feed forward control of operation of said semiconductor manufacturing process, and using said validated relationships to set at least said actual outputs thereof.

52. (New) A semiconductor manufacturing process modeler for modeling a semiconductor manufacturing process as a directed network of nodes for control of said process, wherein each node represents a relationship between inputs and outputs of a component of said semiconductor manufacturing process, each node having at least one input and at least one output, and wherein said semiconductor manufacturing process modeler comprises an input for qualitative definitions of inputs and interconnections for entry into said model and an output for outputting control instructions to a manufacturing unit for controlled operation of said semiconductor manufacturing process.

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